

**REMARKS****Claims Amendments**

After entry of this amendment, claims 1 and 76-92 will be pending in this application. Claims 2-75 have been cancelled without prejudice.

Claims 1 and 76-83 have been amended to recite a method of identifying a colorectal tumor using galectin-4 as a marker, and to improve their form. Claims 84-92 have been added and are directed to a method of identifying a pancreatic tumor using galectin-4 as a marker. Support for the amended and new claims can be found throughout the specification (*see* Figure 11A) and in the claims as originally filed. The amended and new claims do not contain any new matter.

**Rejections Under 35 U.S.C. §112, first paragraph*****Enablement***

The Examiner has rejected claims 1, 5 and 76-83 as allegedly failing to comply with the enablement requirement. The claims relate to the use of “galectin-4, Accession No. AB006781\_s\_at” as a marker for colorectal and pancreatic tumors. The Examiner states that “reference to an accession number is considered improper incorporation of essential material in the disclosure,” and requests that the specification be amended to include the material incorporated by reference.

Applicants traverse. Section 608.01(p) of the Manual of Patent Examining Procedure (“MPEP”), defines “essential material” “as that which is necessary to (1) describe the claimed invention, (2) provide an enabling disclosure of the claimed invention, or (3) describe the best mode.” Applicants respectfully submit that the actual sequence of galectin-4 is not “essential material.” As described in detail below, the actual sequence of galectin-4 is not necessary to meet the written description, the enablement requirement or best mode requirement.

The enablement requirement is met if the specification describes the claimed invention in such a way as to enable any person skilled in the art to make and use the claimed invention

without undue experimentation. *See generally*, MPEP §2164.01. A person skilled in the art could make and use the claimed invention based on the information provided in the specification without any undue experimentation. At the time that the specification was filed, the sequence of galectin-4 was well-known by those skilled in the art and was readily accessible by reference to its GenBank Accession No. which was provided in the specification. “A patent need not teach, and preferably omits, what is well known in the art.” *Id.* (citations omitted). Accordingly, the actual sequence of galectin-4 need not be added to the specification to meet the enablement requirement.

### ***Written Description***

The Examiner has also rejected claims 1, 5 and 76-83 as allegedly failing to comply with the written description requirement. The Examiner states that “the specification fails to specifically identify the polynucleotide sequence for [galectin-4]” and hence “does not provide one skill in the art with the materials in hand to perform the methods of the invention.”

Applicants respectfully traverse. The written requirement is met so long as the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, the inventor was in possession of the claimed invention. *See, e.g., Vas-Cath Inc. v. Mahurkar*, 19 U.S.P.Q.2d 1111 (Fed. Cir. 1991); *see also* MPEP §2163. The sequence of galectin-4 was known at the time that the instant specification was filed and was incorporated into the specification by reference to its GenBank Accession No. A person skilled in the art could have readily obtained the sequence of galectin-4 from GenBank using the Accession No. provided in the specification. Based on this information, a person skilled in the art would have readily concluded that the inventor of the instant specification was in possession of the claimed methods at the time that the specification was filed. Accordingly, the actual sequence of galectin-4 need not be added to the specification to meet the written description requirement.

The Examiner points that GenBank Accession Nos. may be continually updated/ altered or even deleted, and are therefore not permanent. While Applicants acknowledge that sequences in GenBank may be revised, Applicants respectfully submit that GenBank has a “Sequence Revision Tool” that allows a person of skill in the art to determine whether a sequence has been revised and what changes have been made to the sequence. Applicants attached as Exhibit A

certain information relating to the “Sequence Revision Tool” of GenBank, and as Exhibit B certain information relating to the sequence revision history of GenBank Accession No. AB006781. The sequence revision history of GenBank Accession No. AB006781 indicates that while the information associated with this Accession No. has been updated several times since the sequence was first submitted to GenBank on September 10, 1997 the actual nucleotide sequence associated with this accession no. has been unchanged. This sequence revision history indicates that prior versions of a GenBank Accession No. can be accessed and evaluated.

The Examiner acknowledges that the specification refers to a “fairly specific gene name” but states that “it is unclear what portion of the gene sequence was used, or is suitable for use in the claimed methods.” The specification teaches that the gene expression pattern of a marker gene could be determined using any specific hybridization probes or by measuring the level of a polypeptide encoded by said marker gene. *See* page 16, lines 11-23. Further, the specification states that “[t]he marker genes (or encoded proteins) to be assessed can be all or a portion of the marker genes associated with a particular tumor class” (*see* page 16, lines 21-22). Thus, the claimed methods do not require the use of a specific portion of galectin-4. Rather, the claimed methods encompass all methods of assessing the expression of galectin-4, and the use of all sequences which are capable of assessing the expression of galectin-4. A person of skill in the art would be able to readily identify such sequences without undue experimentation.

In support of this written description rejection, the Examiner cites to cases such as *Fiddes v. Baird, Amgen Inc. v. Chugai Pharmaceuticals Co. Ltd.*, and *University of California v. Eli Lilly and Co.* Applicants respectfully submit that these cases are inapplicable to the facts of this case. In the cases cited by the Examiner, the claims-at-issue encompassed sequences which were not yet known in the art at the time the patents were filed. None of these cases required a re-description of what was already known in the art. *See Capon v. Eshhar*, 418 F.3d 1349 at \*7 (Fed. Cir. August 12, 2005). In contrast, in the instant application the claims are directed to methods of identifying certain tumors by reference to a gene whose sequence was known at the time that the specification was filed and whose sequence was publicly available in GenBank at the time the specification was filed.

Applicants respectfully submit that the facts of this case are analogous to the facts of *Capon*. At issue in this case was whether claims directed to chimeric genes which combine known DNA sequences met the written description requirement when the specification describes the chimeric genes by reference to knowledge in the art of the “structure, formula, chemical name, or physical properties of the DNA or the proteins.” *Id.* The United States Patent and Trademark Office Board of Patent Appeals and Interferences held that it did not. The Federal Circuit reversed stating:

The written description requirement must be applied in the context of the particular invention and the state of the knowledge. The Board’s rule that the nucleotide sequences of the chimeric genes must be fully presented, although the nucleotide sequences of the component DNA are known, is an inappropriate generalization. When the prior art includes the nucleotide information, precedent does not set a *per se* rule that the information must be determined afresh.

*Id.* Further to *Capon*, it would be inappropriate for the Examiner to require that the instant application incorporate the actual nucleotide sequence of galectin-4, which was known in the art at the time the instant application was filed, in order to comply with the written description requirement.

In view of the arguments presented herein, Applicants respectfully request that the Examiner reconsider and withdraw the enablement and written description rejections under 35 U.S.C. §112, first paragraph.

### **Priority**

The Examiner states that the claimed priority is denied because the previously filed provisional applications failed to provide an actual sequence for galectin-4. The Examiner alleges that in the absence of an actual sequence the priority applications fail to fulfill the enablement and written description requirements.

Applicants traverse. As discussed above, the sequence of galectin-4 was well known in the art at the time the priority applications were filed and is not required to meet the written description and enablement requirements. Further, the actual sequence of galectin-4 was incorporated into the subject application and the priority applications by reference to a GenBank

Accession No. Accordingly, Applicants request that the Examiner grant the benefit of the claimed priority dates.

### **Rejection Under 35 U.S.C. §102(e)**

The Examiner has rejected claims 1, 5 and 76-83 as anticipated by U.S. Patent Publication No. US 2002/0142981 by Horne et al. ("Horne"). The Examiner also has rejected claims 1, 5 and 76-83 as anticipated by U.S. Patent Publication No. US 2004/0033502 by Williams et al. ("Williams").<sup>1</sup>

Applicants traverse these rejections. *Horne* discloses the use of galectin-4 as a marker for liver cancer. *Williams* disclose the use of galectin-4 as a marker for esophageal cancer. Nothing in *Horne* or *Williams* discloses or suggests the use of galectin-4 as a marker for colorectal or pancreatic tumors. Accordingly, neither *Horne* nor *Williams* anticipate the amended claims.

### **Claim Objections**

The Examiner objected to the claims as including non-elected subject matter. The claim amendments obviate this objection.

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<sup>1</sup> Applicants have not determined whether *Horne* and *Williams* are entitled to their claimed priority dates. If *Horne* and/or *Williams* are not entitled to their claimed priority dates, these references may not be prior art to the instant patent application.

**CONCLUSION**

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Applicants believe no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-1945, from which the undersigned is authorized to draw, under Order No. WIBL-P01-549.

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